



U.S. Department of Health and Human Services



Agency for Healthcare Research and Quality

Advancing Excellence in Health Care • www.ahrq.gov

The Healthcare Cost and Utilization Project (HCUP)

**Tools and Products to Support Health Services
Research and Policy Analysis**

**Agency for Healthcare Research and Quality
Webinar ♦ April 22, 2015**



AHRQ – Agency within DHHS



United States Department of
Health & Human Services



- **Brief Database Review**
- **Software Tools**
- **Supplemental Files**
- **HCUPnet Overview**
- **Publications and Publication Search**
- **How to Access HCUP Resources**

Healthcare Cost and Utilization Project (HCUP)



H·CUP

HEALTHCARE COST AND UTILIZATION PROJECT

**THE LARGEST COLLECTION OF MULTI-YEAR,
ALL-PAYER, ENCOUNTER-LEVEL:**

**INPATIENT
EMERGENCY DEPARTMENT
AMBULATORY SURGERY**

HOSPITAL-BASED ADMINISTRATIVE DATA

HCUP is a comprehensive set of publicly available all-payer health care data



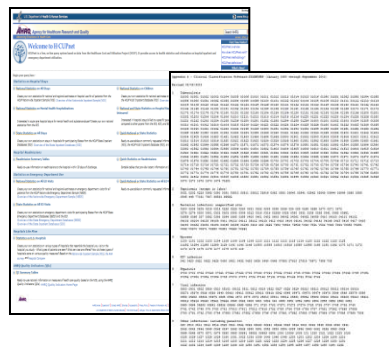
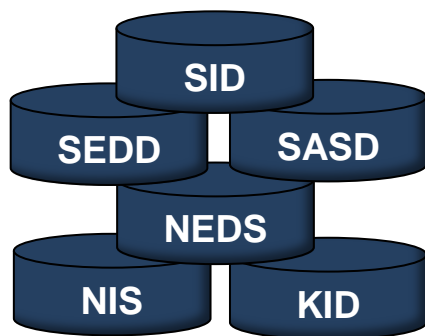
Includes multi-year inpatient and outpatient data, based on the hospital billing record

HCUP
Databases

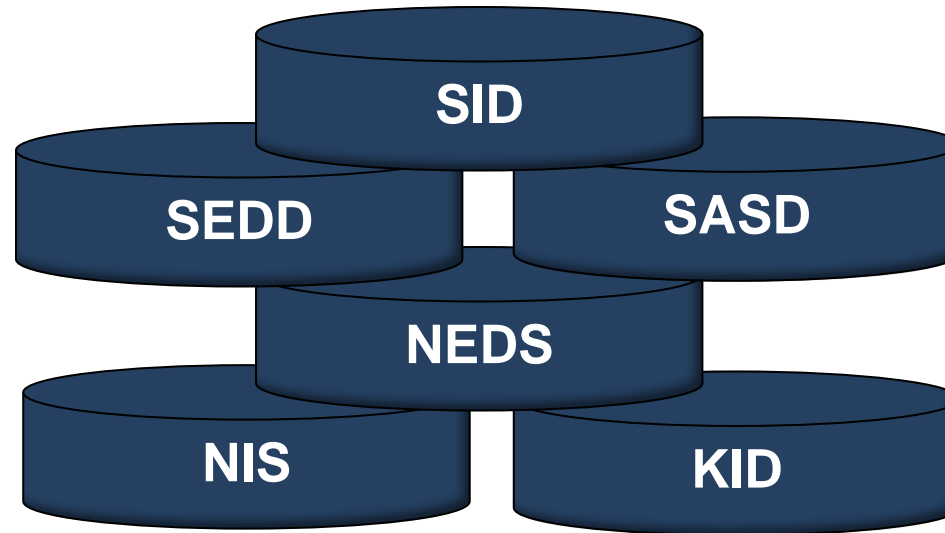
Research
Tools

Research
Publications

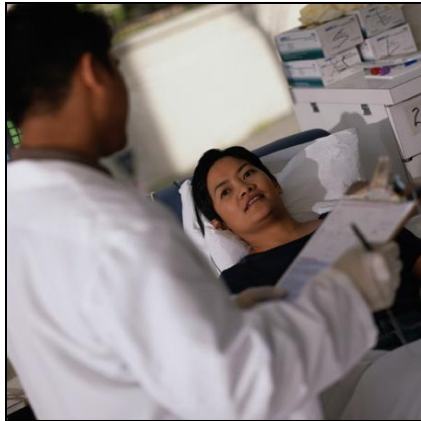
User Support



The Core of HCUP: Hospital-Based IP, ED, AS Databases



Inpatient, Emergency Department, and Ambulatory Surgery and Services Databases Based on Hospital Billing Data



**State Inpatient
Databases (SID)**



**State Emergency Department
Databases (SEDD)**



**State Ambulatory Surgery
and Services Databases
(SASD)**



**National (Nationwide)
Inpatient Sample (NIS)**



**Nationwide Emergency
Department Sample
(NEDS)**



**Kids' Inpatient Database
(KID)**

State Inpatient
Databases
(SID)

All inpatient hospital discharge data (including those admissions that started in the ED) from participating HCUP States

State Ambulatory
Surgery & Services
Databases
(SASD)

Ambulatory surgery data (ambulatory surgery and other services from hospital-owned and sometimes nonhospital-owned facilities) from participating HCUP States

State Emergency
Department Databases
(SEDD)

Emergency department data (treat and release) from participating HCUP States



HCUP Nationwide Databases



National (Nationwide)
Inpatient Sample



(NIS)

Inpatient discharge data for a **sample of discharges from all hospitals** in SID

Kids' Inpatient
Database
(KID)

Pediatric inpatient hospital discharge data from a **sample of pediatric discharges** in SID

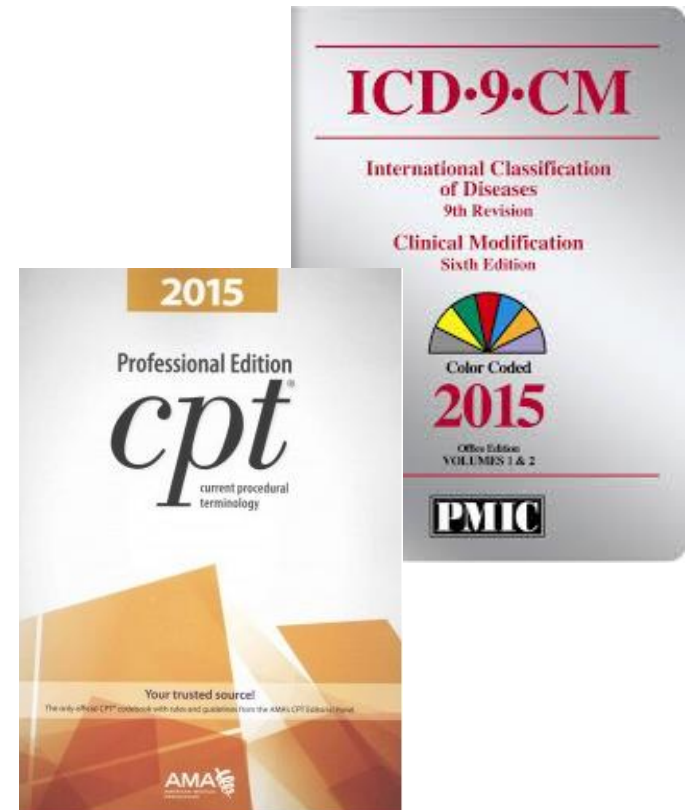
Nationwide Emergency
Department Sample
(NEDS)

Emergency department data (treat and release & admitted) from a **sample of hospitals** in SID and SEDD

- **Brief Database Review**
- **Software Tools**
- **Supplemental Files**
- **HCUPnet Overview**
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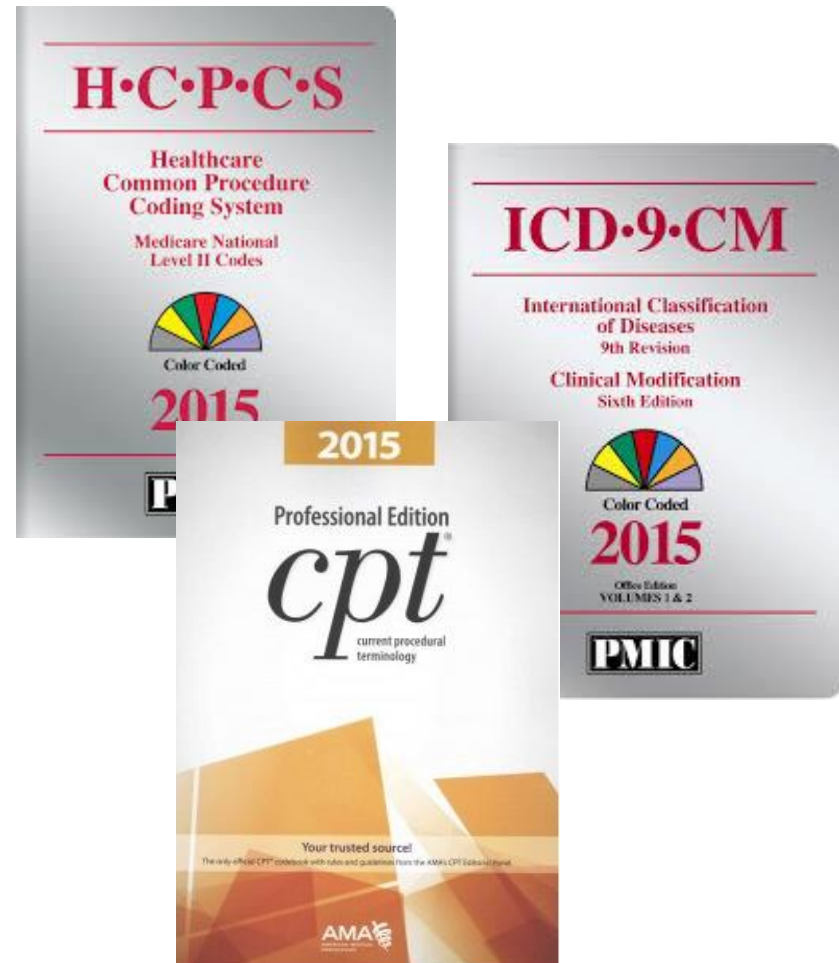
Most HCUP Tools Can be Applied to Any Administrative Database

- Clinical Classifications Software
- Procedure Classes
- Chronic Condition Indicator
- Comorbidity Software
- Utilization Flags
- Surgery Flags
- AHRQ Quality Indicators
 - Prevention Quality Indicators
 - Inpatient Quality Indicators
 - Patient Safety Indicators
 - Pediatric Indicators



Most Tools Based On Medical Coding Classifications

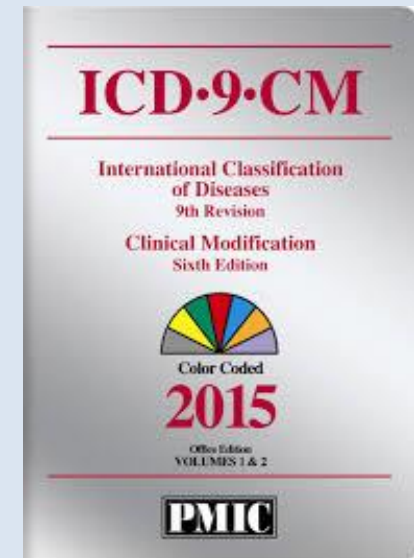
- ICD-9-CM
- ICD-10-CM/PCS
- CPT
- HCPCS
- DRGs
- MDC
- CCS



- | | | | |
|--|-------------------------|--|-----------------|
| <ul style="list-style-type: none">• ICD-9-CM• ICD-10-CM/PCS• CPT• HCPCS | Individual Codes | <ul style="list-style-type: none">• DRGs• MDC• CCS | Groupers |
|--|-------------------------|--|-----------------|

Which coding system is appropriate for your analysis?

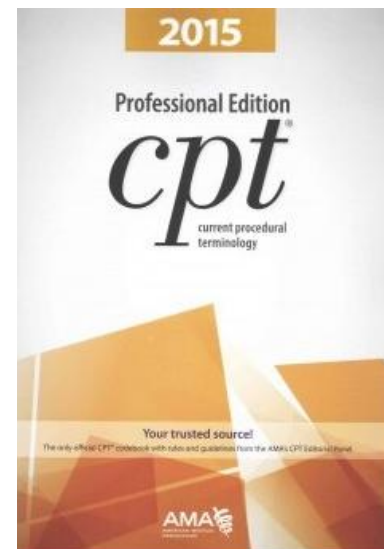
- **ICD-9-CM Procedure Codes**
- **ICD-9-CM Diagnosis Codes**
- **Included in both inpatient and outpatient databases**



- ICD-10-CM - Diagnosis coding under this system uses 3–7 alpha and numeric digits and full code titles
- ICD-10-PCS - Procedure coding system uses 7 alpha or numeric digits

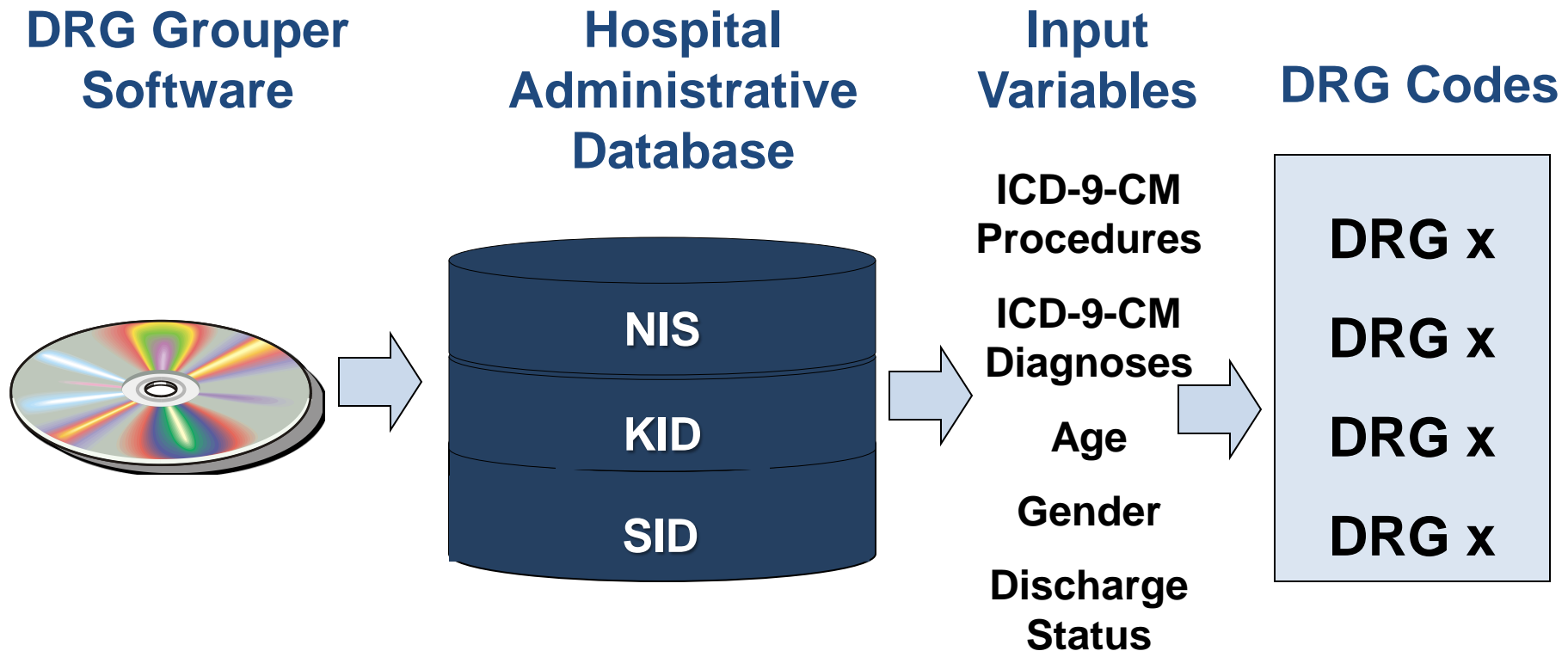
Common Procedural Coding System – CPT & HCPCS

- CPT
- HCPCS
- Local Codes
- Included in outpatient (ED and SASD) databases

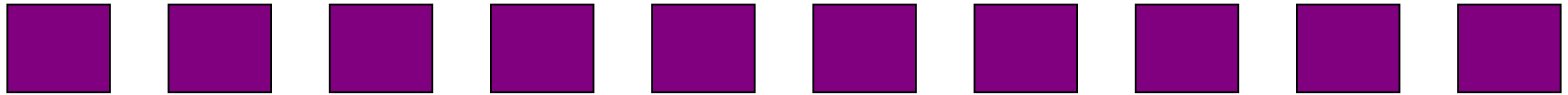


Diagnosis Related Groups (DRG)

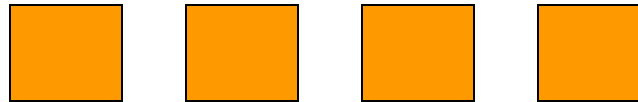
Groups ICD-9-CM Codes into Clinical/Resource Categories using principal diagnosis, secondary diagnoses, surgical procedures, age, gender, and discharge status of the patients treated



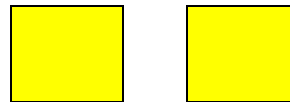
Major Diagnostic Category (MDC)



Over 15,000 ICD-9-CM Codes



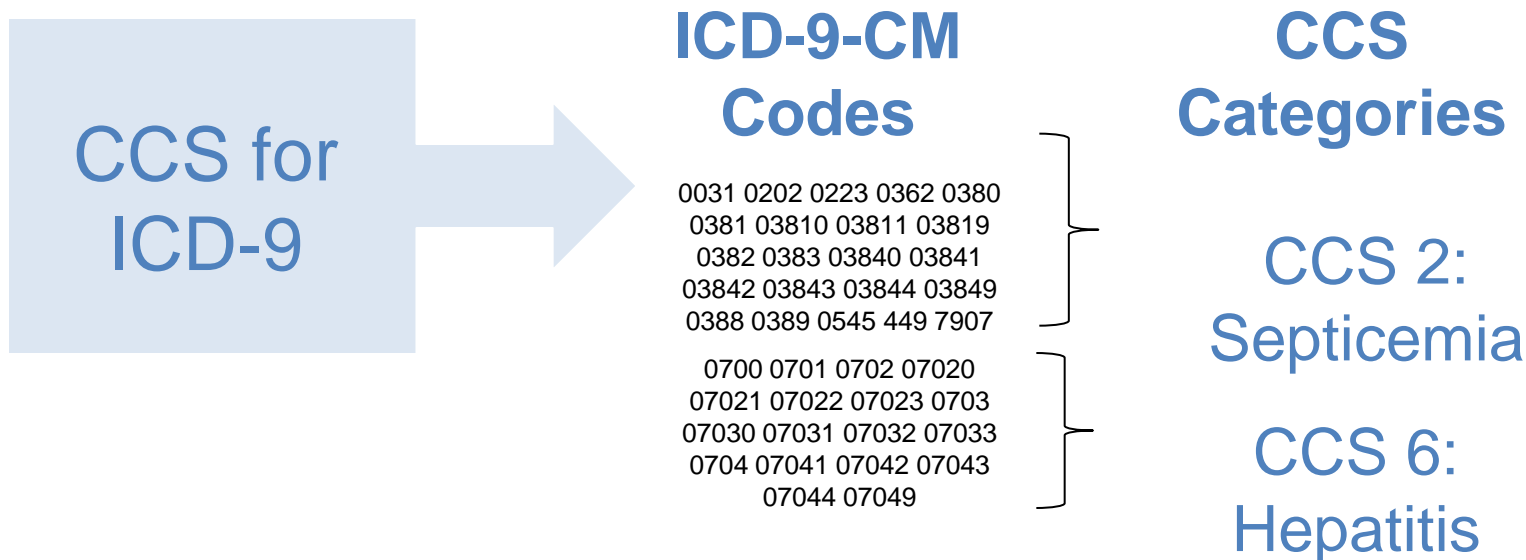
Approximately 500 DRGs



25 MDCs

Clinical Classifications Software (CCS)

- Clusters diagnosis and procedure codes into categories
 - ▶ >14,000 diagnosis codes → 285 categories
 - ▶ > 4,000 procedure codes → 231 categories
- Useful for presenting descriptive statistics, understanding patterns



- ICD-9-CM diagnoses and procedures
 - ▶ Single-level
 - ▶ Multi-level
- ICD-10-CM diagnoses and ICD-10-PCS procedures
 - ▶ Single-level
- ICD-10 for mortality
- Services and Procedures
 - ▶ Common Procedural Terminology (AMA)

What Codes Are Used in HCUP Data Files?

DETAILED CODES

ICD-9-CM

- Diagnosis Codes
- Procedure Codes

CPT

HCPCS

GROUPED CODES

DRG

MDC

CCS

Inpatient Databases

ICD-9-CM

DRG

MDC

CCS

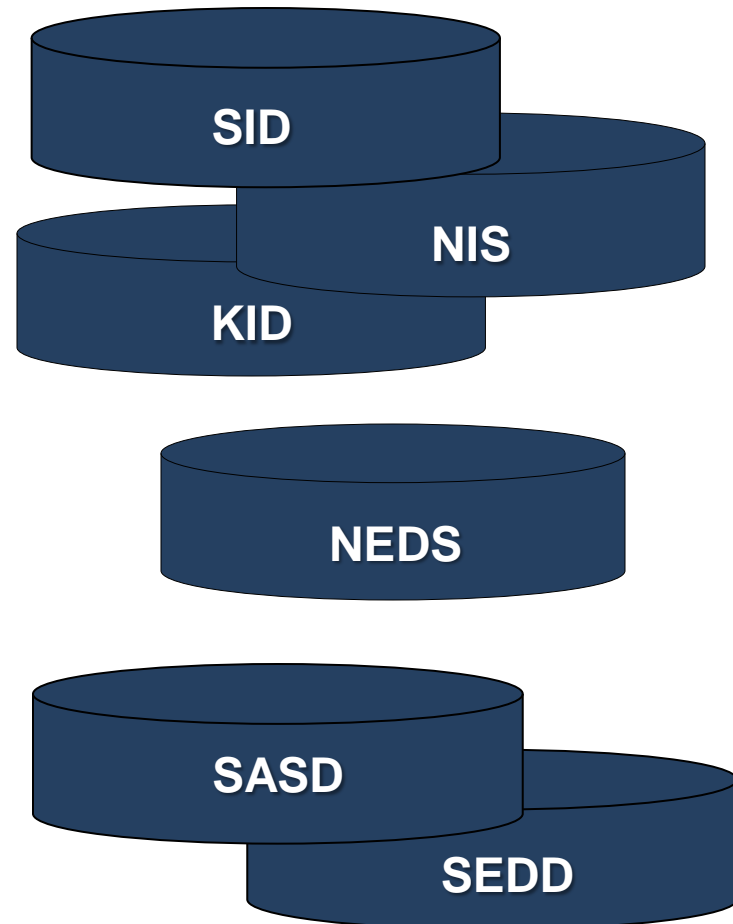
Outpatient Databases

ICD-9-CM

CPT

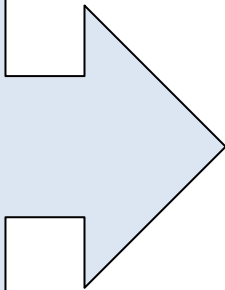
HCPCS

CCS



- Groups procedure codes into one of four categories
 - ▶ ICD-10-PCS
 - ▶ ICD-9-CM procedure codes
- Major procedures defined as OR procedures (DRGs)

ICD-10-PCS
or ICD-9-CM
Procedure
Codes



1. Minor Diagnostic

Ex: Electrocardiogram

2. Minor Therapeutic

Ex: Pacemaker

3. Major Diagnostic

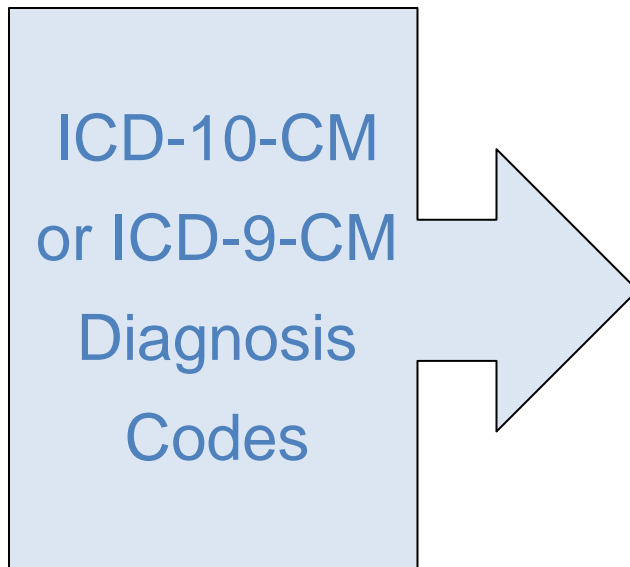
Ex: Pericardial Biopsy

4. Major Therapeutic

Ex: CABG

Chronic Condition Indicator (CCI)

- Groups diagnosis codes into Chronic or Non-Chronic Categories
 - ICD-10-CM diagnosis codes
 - ICD-9-CM diagnosis codes



- **Chronic**
Ex: Diabetes
- **Non-Chronic**
Ex: Food Poisoning

- Creates and appends indicator flags to each record for 29 major comorbidities
 - ▶ ICD-10-CM diagnosis codes
 - ▶ ICD-9-CM diagnosis codes

Comorbidity Software



29 Comorbidity Groups

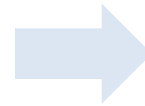
Valvular disease
Pulm circ disorders
Peripheral vascular dx
Hypertension
Paralysis
Other neuro disorders
Chronic pulmonary dx
DM w/o complications
DM w/ complications
Hypothyroidism
Renal failure
Liver disease ...

- Reveals additional information about the use of health care services
- Primarily uses UB-04 revenue codes, augmented with ICD-9-CM procedure codes

Utilization Flag
Software



UB-04
codes
+
ICD-9-CM
codes



- Emergency Room
- Observation Services/ CT Scan
- Intensive Care Unit

Utilization Flags

Accommodation

Intensive Care Unit (ICU)	Coronary Care Unit (CCU)
Newborn Level II	Newborn Level III
Newborn Level IV	

Cardiac Services

Cardiac Catheterization Lab	Cardiac Stress Test
Echocardiogram	Electrocardiogram (EKG)

Imaging and Diagnostic Tests

Computed Tomography (CT) Scan	Chest X-Ray
Electroencephalogram (EEG)	Ultrasound
Magnetic Resonance Technology (MRT)	Nuclear Medicine

Devices

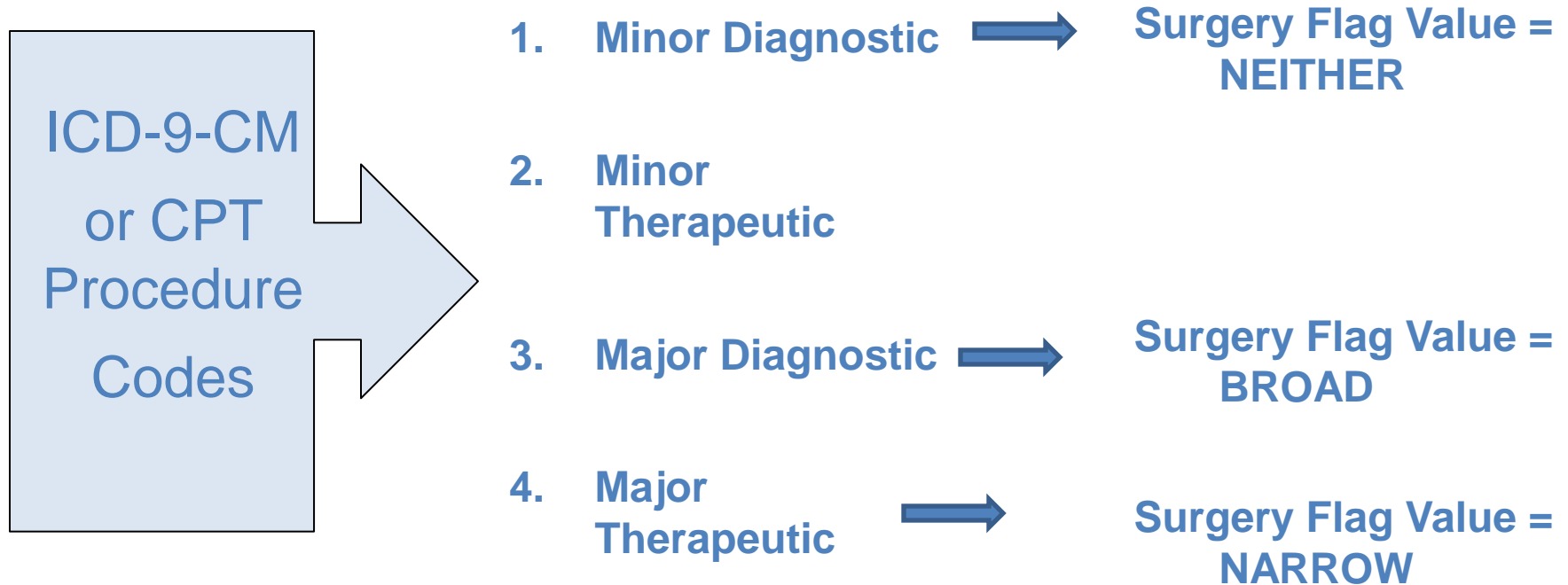
Pacemaker	Other Implants
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Therapeutic Services

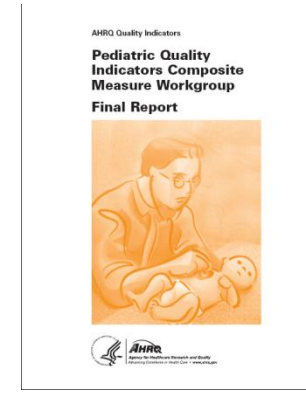
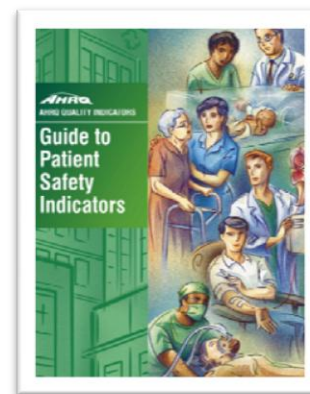
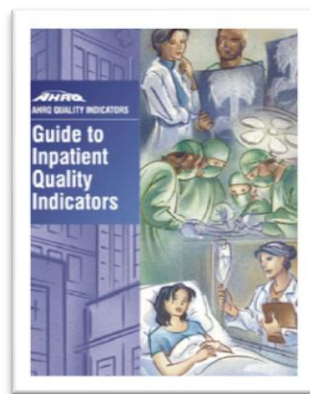
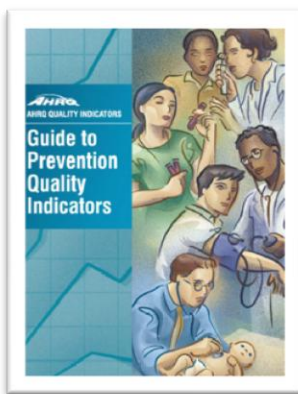
Lithotripsy	Occupational Therapy
Physical Therapy	Respiratory Therapy
Therapeutic Radiology and Chemotherapy	Renal Dialysis
Speech-Language Pathology	Erythropoietin (EPO)
Mental Health and Substance Abuse	Blood

There are not ICD-9-CM codes for all services. Concern exists that some diagnostic procedures may be under-reported

- Identifies surgical procedures and encounters in ICD-9-CM or CPT-based inpatient and ambulatory surgery data

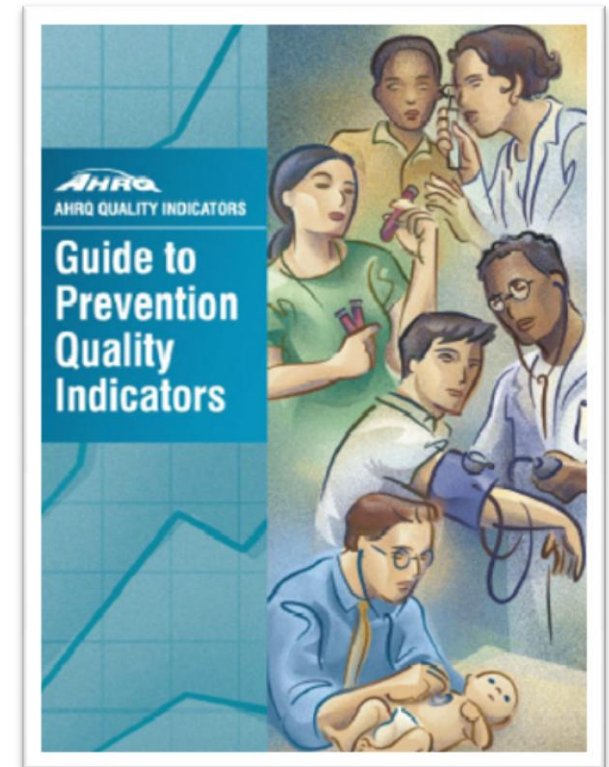


- Creates measures of health care quality using inpatient administrative data
 - ▶ 4 Quality Indicators
 1. Prevention Quality Indicators
 2. Inpatient Quality Indicators
 3. Patient Safety Indicators
 4. Pediatric Indicators



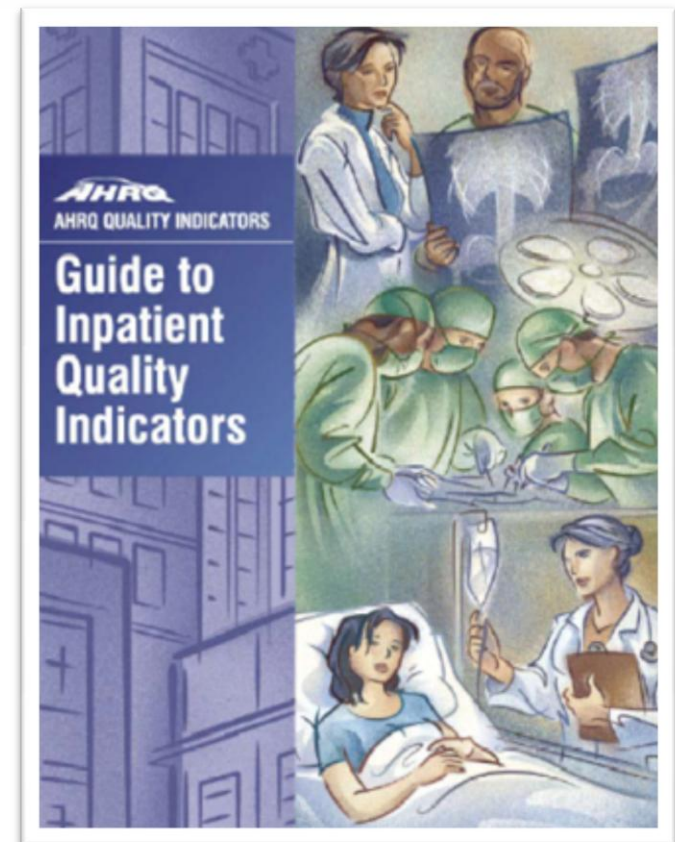
Prevention Quality Indicators (PQIs)

- Identify hospital admissions that are potentially preventable through high-quality outpatient care.
- Examples of PQI Measures:
 - ▶ Diabetes Short-term Complication Admission Rate
 - ▶ Diabetes Long-term Complication Admission Rate
 - ▶ Pediatric Asthma Admission Rate
 - ▶ Pediatric Gastroenteritis Admission Rate
 - ▶ Hypertension Admission Rate



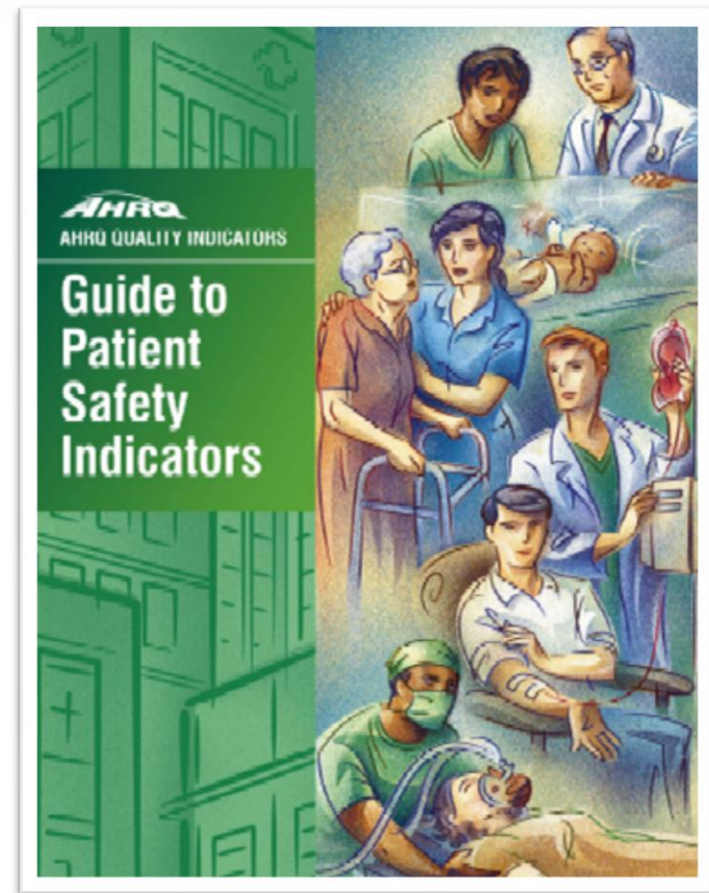
Inpatient Quality Indicators (IQI)

- Reflect quality of care inside hospitals:
 - ▶ Inpatient mortality for medical conditions and surgical procedures
 - ▶ Utilization of procedures
 - ▶ Volume of procedures
- Examples of IQI Measures:
 - ▶ Esophageal Resection Volume
 - ▶ Pneumonia Mortality Rate
 - ▶ Coronary Artery Bypass Graft Mortality Rate
 - ▶ Cesarean Section Delivery Rate



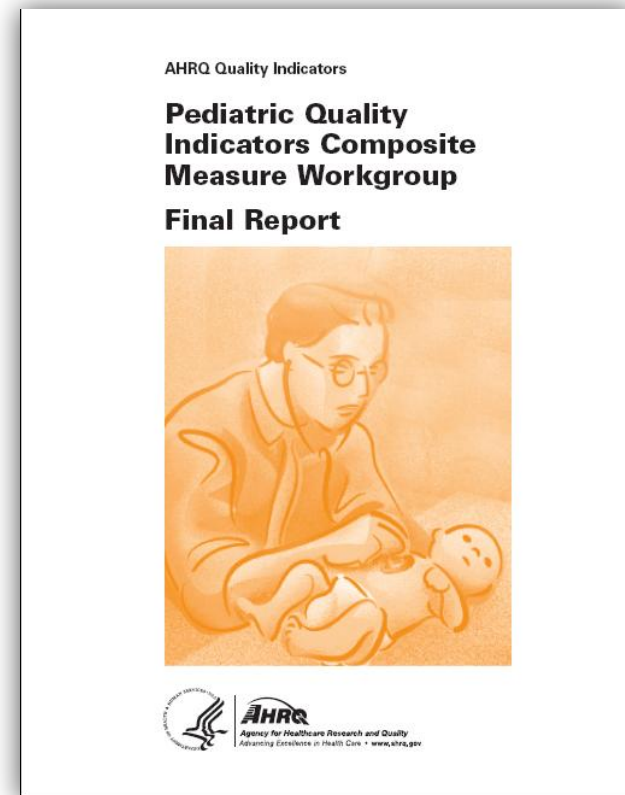
Patient Safety Indicators (PSI)

- Identify potentially avoidable complications and iatrogenic events.
- Examples of PSI Measures:
 - ▶ Complications of Anesthesia
 - ▶ Death in Low-Mortality DRGs
 - ▶ Decubitus Ulcer
 - ▶ Failure to Rescue
 - ▶ Foreign Body Left During Procedure
 - ▶ Iatrogenic Pneumothorax



Pediatric Quality Indicators (PDI)

- Identify potentially avoidable hospitalizations among children.
- Examples of PDI Measures:
 - ▶ Accidental Puncture or Laceration
 - ▶ Decubitus Ulcer
 - ▶ Neonatal mortality
 - ▶ Pediatric Heart Surgery Mortality
 - ▶ Postoperative Hemorrhage or Hematoma





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AHRQ Quality Indicators™

[Home](#)[Modules](#)[Software](#)[News](#)[Resources](#)[FAQs & Support](#)[Archives](#)

Prevention Quality Indicators *identify hospital admissions in geographic areas that evidence suggests may have been avoided through access to high-quality outpatient care....* >> More Info

Prevention Quality Indicators

[>> More Info](#)

Inpatient Quality Indicators

[>> More Info](#)

Patient Safety Indicators

[>> More Info](#)

Pediatric Quality Indicators

[>> More Info](#)

Introduction

The Agency for Healthcare Research and Quality (AHRQ) has developed an array of health care decision making and research tools that can be used by program managers, researchers, and others at the Federal, State and local levels. The Quality Indicators (QIs) are measures of health care quality that make use of readily available hospital inpatient administrative data. The current AHRQ QI™ modules expand HCUP QIs. The QIs can be used to highlight potential quality concerns, identify areas that need further study and investigation, and track changes over time.

The current AHRQ QI modules represent various aspects of quality: Prevention Quality Indicators, Inpatient Quality Indicators, Patient Safety Indicators, and Pediatric Quality Indicators.

The AHRQ QIs are used in free software distributed by AHRQ. The software can be used to help hospitals identify quality of care events that might need further study. The software programs can be applied to any hospital inpatient administrative data. These data are readily available and relatively inexpensive to use.

Email Sign up

Register to receive email of AHRQ announcements and the availability of new quality indicators:

✉ Sign Up: Quality Indicators email updates

News & Announcements

- ♦ March 31, 2015 — Release of March 2015 AHRQ Quality Indicators SAS Version 5.0™ (QI) *New!*
- ♦ March 13, 2015 — Release of Alpha ICD-10 software *New!*
- ♦ February 23, 2015 — Release of 2015 AHRQ MapIT software *New!*
- ♦ July 10, 2014 — Release of July 2014 AHRQ Quality Indicators™ SAS Version 4.5a
- ♦ November 26, 2013 — Review of Proposed Changes with ICD-10-CM/PCS Conversion of Quality

- **Brief Database Review**
- **Software Tools**
- **Supplemental Files**
- **HCUPnet Overview**
- **Publications and Publication Search**
- **How to Access HCUP Resources**



HCUP Supplemental Files can only be applied to HCUP Databases



- **Supplemental Variables for Revisit Analyses**
- **Cost-to-Charge Ratio Files**
- **Hospital Market Structure Files**
- **Trend Weights Files (NIS & KID)**
- **NIS Hospital Ownership File**
- **AHA Linkage Files**



Cost-to-Charge Ratio (CCR) Files

- Enable conversion of charge data to cost data on the NIS, KID, and SID

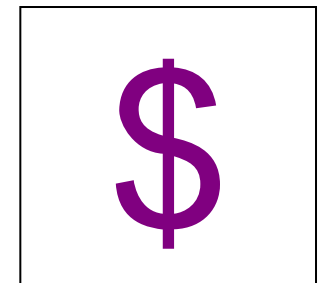


**Hospital-Level
Data**



	A	B	C
1	HOSPID	APICC	GAPICC
2	xxxx	xxxx	xxxx
3	xxxx	xxxx	xxxx
4	xxxx	xxxx	xxxx
5	xxxx	xxxx	xxxx
6	xxxx	xxxx	xxxx
7	xxxx	xxxx	xxxx

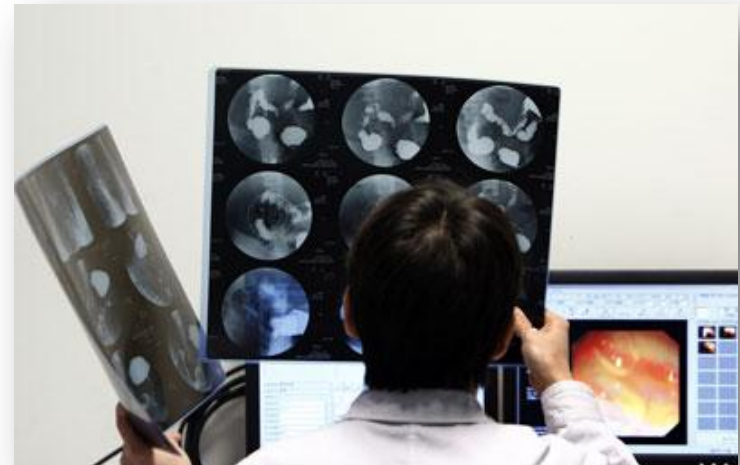
Apply Ratios



**Convert Total
Charges to Costs**

Hospital Market Structure (HMS) Files

- Contain various measures of hospital market competition
- Allow users to broadly characterize the intensity of competition that hospitals face
 - ▶ Using various definitions of market area





HCUP Supplemental Variables for Revisit Analyses



- Allows linkage across settings and time
 - ▶ Hospital readmissions
 - ▶ ED visits following hospital discharge
 - ▶ Inpatient hospitalizations following ambulatory surgery visits
- Adheres to strict privacy guidelines

HCUP Supplemental Variables for Revisit Analyses

- There are two HCUP supplemental variables:
 1. Synthetic person-level identifiers
 - Verified against the patient's date of birth and gender
 - Examined for completeness (VisitLink)
 2. Timing variable determines the number of days between events for an individual (DaysToEvent)
 - Without the use of actual dates
- HCUP revisit variables can be used only with the SID, SASD, and SEDD (not nationwide databases) for States with encrypted patient identifiers
- National revisit statistics are available on HCUPnet



HCUP Supplemental Variables for Revisit Analyses by State



State	SID	SEDD	SASD
Arizona	2003-2007	2005-2007	
Arkansas	2004-2012		
California	2003-2011	2005-2011	2005-2011
Florida	2004-2013	2005-2013	2004-2013
Iowa	2009-2013	2010-2013	2010-2013
Maryland	2012		
Massachusetts	2010-2012	2010-2012	
Mississippi	2010-2011		
Nebraska	2003-2013	2003-2013	2003-2013



HCUP Supplemental Variables for Revisit Analyses by State



State	SID	SEDD	SASD
Nevada	2003-2007		
New Mexico	2009-2012		
New York	2003-2012	2005-2012	2003-2012
North Carolina	2003-2010	2007-2010	2003-2010
Utah	2003-2011	2003-2011	2003-2011
Vermont	2011-2013	2011-2013	2011-2013
Washington	2003-2012		

Example of Adding Readmissions/ Revisit Data to HCUP State Files

- Example of how to use the revisit variables
 - ▶ Determined if discharge home with home health care is independent predictor of increased readmission after pancreatectomy
 - ▶ 21 percent of patients were readmitted within 30 days of discharge
 - ▶ Mean time from readmission to discharge was 10.1 days and mean LOS for the readmission was 7.1 days
 - ▶ Three of the most common primary diagnoses for readmission were surgery-specific complications (48 percent), followed by failure to thrive (14 percent), and septicemia (6 percent)



Additional HCUP Supplemental Files

■ Trend Weights Files (NIS & KID)

- Discharge-level files that provide trend weights and data elements that are consistently defined across data years

■ NIS Hospital Ownership File

- Hospital-level files facilitate analysis of the NIS by hospital ownership categories

■ AHA Linkage Files

- Enable researchers to link hospital identifiers in some State databases to the AHA Annual Survey Databases

http://www.hcup-us.ahrq.gov/tools_software.jsp



Tools & Software

HCUP tools and software help health services researchers and decision makers to use HCUP and other similar databases. These products are developed by AHRQ through a Federal-State-Industry partnership.

[Home](#)[Databases](#)[Tools & Software](#)[Reports](#)[News & Events](#)[Purchase HCUP Data](#)[Technical Assistance](#)[Data Innovations](#)

Favorites

HCUPnet

[HCUPnet](#) is an interactive tool for identifying, tracking, analyzing, and comparing statistics on hospital and emergency care. HCUPnet provides statistics from the HCUP nationwide databases ([NIS](#), [KID](#), and [NEDS](#)) and the State-level databases ([SID](#), [SASD](#), and [SEDD](#)) for those States that have agreed to participate.

MONAHRQ

[MONAHRQ](#) is a software product that enables organizations - such as state and local data organizations, Chartered Value Exchanges, hospital systems, and health plans - to input their own hospital administrative data and generate a data-driven Web site.

AHRQ Quality Indicators (QIs)

[AHRQ Quality Indicators \(QIs\)](#) use hospital administrative data to highlight potential quality concerns, identify areas for study and investigation, and track changes over time.

HCUP Tools & Software

The HCUP Tools and Software are analytic methods that, when applied to HCUP databases, systematically create new data elements from existing data, thereby enhancing a researcher's ability to conduct analyses. While designed to be used with HCUP, they can also be applied to other administrative databases as well.

Tools for ICD-9-CM

Clinical Classifications Software (CCS) for ICD-9-CM

[Clinical Classifications Software \(CCS\)](#) provides a method for classifying ICD-9-CM diagnoses or procedures into clinically meaningful categories, which can be used for aggregate statistical reporting of a variety of types. (Updated for codes valid through FY 2015.)

Chronic Condition Indicator

The [Chronic Condition Indicator \(CCI\)](#) provides users an easy way to categorize ICD-9-CM diagnosis codes into one of two categories: chronic or not chronic. The tool can also assign ICD-9-CM diagnosis codes into 1 of 18 body system categories. (Codes valid through FY 2015.)

Comorbidity Software

[Comorbidity Software](#) assigns variables that identify coexisting conditions on hospital discharge records. (Codes valid through FY 2015.)

Procedure Classes

[Procedure Classes](#) facilitate research on hospital services using administrative data by identifying whether a procedure is (a) diagnostic or therapeutic, and (b) minor or major in terms of invasiveness and/or resource use. (Updated for codes valid through FY 2015.)

CPT Based Tools

★ Surgery Flags

[Surgery Flags](#) identify surgical procedures and encounters in ICD-9-CM or CPT-based inpatient and ambulatory surgery data. Two types of surgical categories are identified: NARROW surgery is based on a narrow, targeted, and restrictive definition and includes invasive surgical procedures. BROAD surgery includes procedures that fall under the NARROW category but adds less invasive therapeutic and diagnostic procedures that may be often performed in surgical settings. Users must agree to a license to use the Surgery Flags before

Tools for ICD-10-CM/PCS

HCUP tools have been translated to ICD-10-CM/PCS in anticipation of conversion to the new coding system on October 1, 2015. We welcome comments. If you have questions or suggestions for changes, please contact hcup@ahrq.gov.

★ Clinical Classifications Software (CCS) for ICD-10-CM/PCS

[Clinical Classifications Software \(CCS\) for ICD-10-CM/PCS](#) provides a method for classifying ICD-10-CM diagnoses or procedures into clinically meaningful categories, which can be used for aggregate statistical reporting of a variety of types. (Updated for codes valid through FY 2014.)

★ Chronic Condition Indicator for ICD-10-CM

[Chronic Condition Indicator for ICD-10-CM](#) provides users an easy way to categorize ICD-10-CM diagnosis codes into one of two categories: chronic or not chronic. The tool can also assign ICD-10-CM diagnosis codes into 1 of 18 body system categories. (Updated for codes valid through FY 2014.)

★ Comorbidity Software for ICD-10-CM

[Comorbidity Software for ICD-10-CM](#) assigns variables that identify coexisting conditions on hospital discharge records. (Updated for codes valid through FY 2014.)

★ Procedure Classes for ICD-10-PCS

[Procedure Classes for ICD-10-PCS](#) facilitate research on hospital services using administrative data by identifying whether a PCS procedure is (a) diagnostic or therapeutic, and (b) minor or major in terms of invasiveness and/or resource use. (Updated for codes valid through FY 2014.)

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HCUPnet: Quick, free access to HCUP Data



- **Free, interactive online query system**
- **Users generate tables of outcomes by diagnoses and procedures**
- **Data can be cross-classified by patient and hospital characteristics**

<http://hcup.ahrq.gov/hcupnet>



HCUPnet Can Answer a Variety of Questions



- What percentage of hospitalizations for children are uninsured, by State?
- What are the most expensive conditions treated in U.S. hospitals?
- What is the trend in admissions for depression?
- Will there be a sufficient number of cases to do my analysis?
- How do my estimates and calculations compare with HCUPnet (validation)?

- Step-by-step queries on:
 - ▶ Hospital inpatient (NIS and KID)
 - ▶ ED visits (NEDS)
 - ▶ National and regional statistics
- Specialized queries:
 - ▶ Mental health related stays
 - ▶ Stays by expected payer
 - ▶ Hospital-level statistics
- Ready-to-use:
 - ▶ National benchmarks for healthcare quality indicators based on the AHRQ Quality Indicators
 - ▶ “Quick national or State statistics”
 - ▶ Readmissions
 - ▶ Community-level Statistics



How does HCUPnet Work?



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H-CUPnet

How does HCUPnet work? A step-by-step description of the query process.

[» Help](#)
[» Medical dictionary](#)
[» What is HCUP ?](#)
[» HCUPnet definitions](#)
[» HCUP Home](#)

How does HCUPnet work?

[<< Back <<](#)

HCUPnet is based on aggregate statistics tables to speed up data transfer and protect individual records, so not all possible queries can be addressed. If a query is not possible, HCUPnet will not allow you to choose certain parameters. If there is a query you'd like to see that HCUPnet does not support, please contact us at hcup@ahrq.hhs.gov.

With HCUPnet, you build your query step-by-step. Here are the basic steps:

Step 1: Select the focus of your query.

- ✓ Click **National Statistics** if you want information on the entire U.S.
- ✓ Click **For Children Only** if you want to focus on children.
- ✓ Click **State Statistics** to see what State data are available.
- ✓ Check out **Quick National and State Statistics** to see if the information you want is available here in ready-to-go, fully sortable tables.
- ✓ Click **AHRQ Quality Indicators** to get information on the quality of the health care system in the U.S.

Step 2: Select the type of query you want.

- ✓ By **Diagnosis or Procedure** gives you detailed statistics for particular diagnoses or procedures.

You'll be able to get statistics by ICD-9-CM codes, by CCS category (a clinical grouper that puts ICD-9-CM codes into clinically homogeneous categories), by DRG (diagnosis related groups that are used by many insurers for reimbursement purposes), or by MDC (general groups of DRGs that comprise body systems).

- ✓ If you're interested in statistics about all patients in general, click **All Stays**.
- ✓ Click **Trends** if you want to see tables and graphs with trends over time.
- ✓ Click **Rank Order** if you'd like to rank diagnoses or procedures by such factors as number of discharges, charges, or mortality rate.



How does HCUPnet Work?



Step 3: Select the Outcomes and Measures. HCUPnet provides a wide range of measures:

- ✓ Number of discharges
- ✓ Length of stay
- ✓ Total charges
- ✓ Total costs
- ✓ Aggregate charges
- ✓ Percent died in the hospital
- ✓ Discharge status
- ✓ Percent admitted through the emergency department
- ✓ Percent admitted from another hospital
- ✓ Percent admitted from a long term care facility

Step 4: Select patient and hospital characteristics. With HCUPnet you can **Compare Patients** by:

- ✓ Age
- ✓ Gender
- ✓ Primary payer
- ✓ Median income of the patient's ZIP code

And you can **Compare Hospital Types** by:

- ✓ Region of the country
- ✓ Teaching status
- ✓ Location
- ✓ Bedsizes
- ✓ Ownership/control

Step 5: Results. You then get your results in a format that can be **printed** or **downloaded** or you can **instantly rerun the same query** on another database within HCUPnet.

A navigation bar above the query pages lets you know where you are in the HCUPnet system. You can use the navigation bar to go back to previous pages.



Advancing Excellence in Health Care

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First Time Visitor?

[HCUPnet overview](#)[How does HCUPnet work?](#)[HCUPnet methodology?](#)[HCUPnet definitions?](#)

What's New?

- 2012 nationwide and state ED data -- new database just released. (12/17/2014) **Just Added!**
- 2012 Community-level Statistics added. (11/07/2014) **Just Added!**
- 2012 national data on AHRQ Quality Indicators. (10/24/2014)
- All NIS results prior to 2012 recalculated to permit trend analysis **Important Notice!**
- New 2009-2012 readmission data added. (09/24/2014)
- 2012 data for Kids' Inpatient Database (KID). (07/24/2014)
- Cost information for participating states in 2012. (07/11/2014)
- 2012 nationwide hospital data now available. (06/09/2014)



Welcome to H-CUPnet

HCUPnet is a free, on-line query system based on data from the Healthcare Cost and Utilization Project (HCUP). It provides access to health statistics and information on hospital inpatient and emergency department utilization.

<http://hcupnet.ahrq.gov>

Begin your query here -

Statistics on Hospital Stays

▶ National Statistics on All Stays

Create your own statistics for national and regional estimates on hospital use for all patients from the HCUP National (Nationwide) Inpatient Sample (NIS).

[Overview of the National \(Nationwide\) Inpatient Sample \(NIS\)](#)

▶ National Statistics on Mental Health Hospitalizations

Interested in acute care hospital stays for mental health and substance abuse? Create your own national statistics from the NIS.

▶ State Statistics on All Stays

Create your own statistics on stays in hospitals for participating States from the HCUP State Inpatient Databases (SID). [Overview of the State Inpatient Databases \(SID\)](#)

▶ National Statistics on Children

Create your own statistics for national estimates on use of hospitals by children (age 0-17 years) from the HCUP Kids' Inpatient Database (KID).

[Overview of the Kids' Inpatient Database \(KID\)](#)

▶ National and State Statistics on Hospital Stays by Payer - Medicare, Medicaid, Private, Uninsured

Interested in hospital stays billed to a specific payer? Create your own statistics for a payer, alone or compared to other payers from the NIS, KID, and SID.

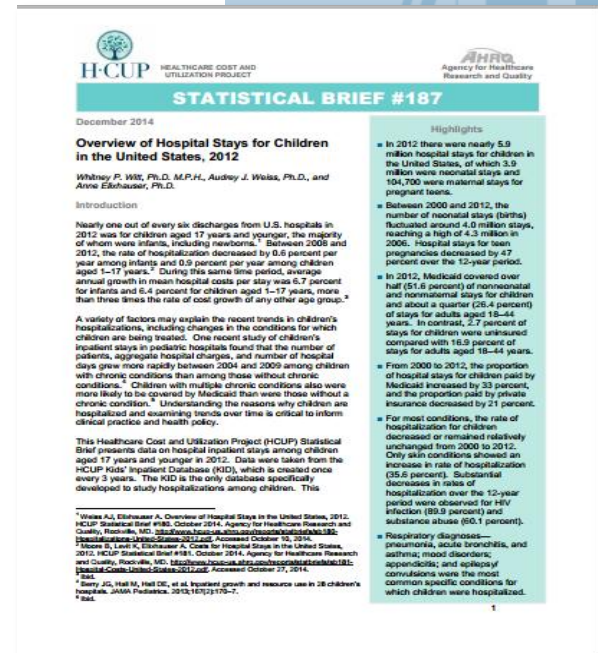
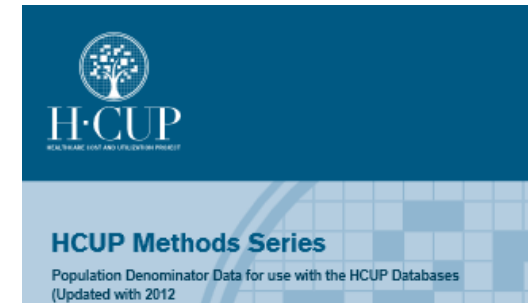
▶ Quick National or State Statistics

Ready-to-use tables on commonly requested information from the HCUP National (Nationwide) Inpatient Sample (NIS), the HCUP Kids' Inpatient Database (KID), or the HCUP State Inpatient Databases (SID).

HCUPnet...	
CAN PRODUCE...	CANNOT PRODUCE...
Simple statistics	More complicated queries
Sample size calculations	Multivariate analyses
Trends information	Statistics involving certain variables
Rank ordering of diagnoses and procedures	Statistics that may violate confidentiality (patient-, provider-, hospital-level data)
Significance testing	

- **Brief Database Review**
- **Software Tools**
- **Supplemental Files**
- **HCUPnet Overview**
- **Publications and Publication Search**
- **How to Access HCUP Resources**

- Statistical Briefs
- Methods Reports





HEALTHCARE COST AND UTILIZATION PROJECT

STATISTICAL BRIEF #186

December 2014

Most Frequent Operating Room Procedures Performed in U.S. Hospitals, 2003–2012

Kathryn R. Fingar, Ph.D., M.P.H., Carol Stocks, Ph.D., R.N., Audrey J. Weiss, Ph.D., and Claudia A. Steiner, M.D., M.P.H.

Introduction

Nearly two-thirds of all hospitalizations involve some type of procedure.¹ Many procedures that occur in the hospital setting, such as blood transfusions and vaccinations, are performed outside the operating room (OR). Other procedures, such as hip replacement and spinal fusion, are surgical in nature and are performed in the OR. In 2011, nearly 29 percent of hospital stays involved OR procedures and 48 percent of hospital costs were for stays that involved OR procedures.² Mean hospital costs for stays with OR procedures were more than double the mean costs for stays without OR procedures.³

This Healthcare Cost and Utilization Project (HCUP) Statistical Brief presents data on OR procedures that were performed most frequently in U.S. hospitals in 2012 among all nonmaternal and nonneonatal stays. Only data on OR procedures associated with an inpatient hospital stay are included. The OR procedures with the greatest change in occurrence (either increasing or decreasing) from 2003 to 2012 are provided. Finally, the OR procedures that were performed most frequently and underwent the greatest change in occurrence are presented by patient age group, patient sex, and expected primary payer.

¹ Plummer A, Wiler LM, Stocks C. Most Frequent Procedures Performed in U.S. Hospitals, 2011. HCUP Statistical Brief #185, October 2013. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.hcup-us.ahrq.gov/reports/statbriefs/s185.pdf>. Accessed August 5, 2014.

² Weiss AJ, Emswiler A. Archive: HCUP Characteristics of Operating Room Procedures in U.S. Hospitals, 2011. HCUP Statistical Brief #176, February 2014. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.hcup-us.ahrq.gov/reports/statbriefs/s176-OperatingRoomProceduresUnitedStates2011.pdf>. Accessed August 5, 2014.

³ Ibid.

Highlights

- Among hospital nonmaternal and nonneonatal stays, 29 percent of hospital costs in that included OR procedure
- The most common procedures in 21 musculoskeletal arthroplasty, hip replacement, and
- Between 2003 and 2012, the rate of hospital stays with the greatest change in occurrence were gastrectomy (+1) and transurethral prostatectomy (+10.4)
- Comparing age and joint procedure common among except infants. (Internal radiologic among adults a) had the greatest change in occurrence are presented by patient age group, patient sex, and expected primary payer.
- Comparing men musculoskeletal were common a and women. Th with the greatest among men was (~30.2 percent) women was gas percent).
- Comparing pay arthroplasty was common OR pr stays paid by M private insurance only was most c stays paid by M uninsured stays



HEALTHCARE COST AND UTILIZATION PROJECT

STATISTICAL BRIEF #187

December 2014

Overview of Hospital Stays for Children in the United States, 2012

Whitney P. Wilt, Ph.D., M.P.H., Audrey J. Weiss, Ph.D., and Anne Ekshouser, Ph.D.

Introduction

Nearly one out of every six discharges from U.S. hospitals in 2012 was for children aged 17 years and younger, the majority of whom were infants, including newborns.¹ Between 2008 and 2012, the rate of hospitalization decreased by 0.6 percent per year among infants and 0.9 percent per year among children aged 1–17 years.² During this same time period, average annual growth in mean hospital costs per stay was 6.7 percent for infants and 6.4 percent for children aged 1–17 years, more than three times the rate of cost growth of any other age group.³

A variety of factors may explain the recent trends in children's hospitalizations, including changes in the conditions for which children are being treated. One recent study of children's inpatient stays in pediatric hospitals found that the number of patients, aggregate hospital charges, and number of hospital days grew more rapidly between 2004 and 2009 among children with chronic conditions than among those without chronic conditions.⁴ Children with multiple chronic conditions also were more likely to be covered by Medicaid than were those without a chronic condition.⁵ Understanding the reasons why children are hospitalized and examining trends over time is critical to inform clinical practice and health policy.

This Healthcare Cost and Utilization Project (HCUP) Statistical Brief presents data on hospital inpatient stays among children aged 17 years and younger in 2012. Data were taken from the HCUP Kids' Inpatient Database (KID), which is created once every 3 years. The KID is the only database specifically developed to study hospitalizations among children. This

¹ Weiss AJ, Ekshouser A. Overview of Hospital Stays in the United States, 2012. HCUP Statistical Brief #187, October 2014. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.hcup-us.ahrq.gov/reports/statbriefs/s187-OverviewHospitalStaysUnitedStates2012.pdf>. Accessed October 10, 2014.

² Ekshouser A, Wiler LM, Stocks C. Rates for Hospital Stays in the United States, 2012. HCUP Statistical Brief #181, October 2014. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.hcup-us.ahrq.gov/reports/statbriefs/s181-RatesforHospitalStaysUnitedStates2012.pdf>. Accessed October 27, 2014.

³ Berry JD, Hall M, Hall DE, et al. Inpatient growth and resource use in 28 children's hospitals. *JAMA Pediatrics*. 2013;167(7):775–7.

⁴ Ibid.

Highlights

- In 2012 there were 1.1 million hospital stays for children in the United States; 104,700 were in pregnant teens.
- Between 2000 and 2012, a number of neonatal stays reached a high 2006. Hospital pregnancies decreased 12 percent over the
- In 2012, Medicaid half (51.6 percent) and nonmaternal and about a quarter of stays for adults years. In contrast stays for children compared with 1 stays for adults
- From 2000 to 2012, 20 of hospital stays Medicaid increased and the proportion insurance decreased
- For most conditions hospitalization decreased or remained unchanged from 2000 to 2012. Only skin condition increase in rate (35.6 percent). decreases in rate hospitalization 6 percent were also infection (89.9 percent) substance abuse
- Respiratory diagnosis pneumonia, asthma, mood disorders; any convulsions were common specific which children a



HEALTHCARE COST AND UTILIZATION PROJECT

STATISTICAL BRIEF #188

February 2015

Surgeries in Hospital-Owned Outpatient Facilities, 2012

Lauren M. Wier, M.P.H., Claudia A. Steiner, M.D., M.P.H., and Pamela L. Owens, Ph.D.

Introduction

From 1992 to 2012, the total number of surgeries at community hospitals in the United States increased by 17 percent to about 26.8 million surgeries. Outpatient surgeries represented a growing share (65 percent; 17.3 million) of all surgeries at community hospitals in the United States in 2012, up from 54 percent (12.3 million) in 1992.¹

Ambulatory surgery (AS), or outpatient surgery, is a planned operation for which the patient is not expected to be admitted to the hospital. Comparison of ambulatory surgery with inpatient surgery is essential for understanding utilization patterns for specific surgical procedures.

This Healthcare Cost and Utilization Project (HCUP) Statistical Brief compares surgeries performed at hospital-owned facilities in the ambulatory (outpatient) versus inpatient setting in 28 States that provide data for both types of settings. These 28 States represent about two-thirds of the U.S. population. Procedures performed in freestanding (nonhospital-owned) AS centers were not included because many State AS data sources do not include these types of centers.

The analysis was limited to visits for adults aged 18 years and older who had an invasive surgery commonly performed for therapeutic purposes (i.e., to treat disease or injury); excluded were noninvasive surgeries and surgeries typically used for diagnostic or exploratory purposes (e.g., colonoscopy). The HCUP Surgery Flag software² was used to identify invasive, therapeutic surgeries based on a narrow, targeted, and restrictive definition that includes surgical procedures that involve incision, excision, manipulation, or suturing of tissue that penetrates or breaks the skin; typically require use of an


¹ American Hospital Association. *Utilization and Volume in Trends Affecting Hospitals and Health Systems*, chapter 3. <http://www.aha.org/research/reports/trendsbook/index.shtml>. Accessed August 13, 2014.

² Agency for Healthcare Research and Quality. HCUP Surgery Flag Software. Healthcare Cost and Utilization Project (HCUP). Rockville, MD: Agency for Healthcare Research and Quality; Updated May 2013. <http://www.hcup-us.ahrq.gov/hcupsoftware/hcupflag/surgeryflag.asp>. Accessed August 13, 2014.

Highlights

- In 2012 across 28 states, 14.4 million hospital visits involved invasive, therapeutic surgeries. Just over half of these visits (53.1 percent) were performed in a hospital-owned ambulatory surgery (AS) setting, and the remaining (46.9 percent) were inpatient.
- Nearly all hospital-based surgical procedures related to the eye (98.8 percent) and ear (91.8 percent) were outpatient. In contrast, obstetrical procedures were nearly all inpatient (97.7 percent).
- The following procedures were among the most common ambulatory surgeries:
 - Lens and cataract procedures (99.9 percent performed in ambulatory settings [AS])
 - Cholecystectomy/common duct exploration (55.1 percent AS)
 - Excision of semilunar cartilage of knee (56.5 percent AS)
 - Hernia repair (50.2 percent AS)
 - Lumpectomy (56.5 percent AS)
 - Decompression peripheral nerve (55.2 percent AS)
 - Transurethral excision, drainage, or removal urinary obstruction (71.9 percent AS)
 - Pacemaker/cardioverter (64.0 percent AS)
 - Skin graft (67.0 percent AS)
 - Hysterectomy (39.8 percent AS)
 - Laminectomy/laminectomy intervertebral disc (26.1 percent AS)

Methodological information on the HCUP databases and software tools



HCUP Methods Series
The HCUP Method Series features a broad array of methodological information on the HCUP databases and software tools. These reports are developed by AHRQ through a Federal-State-Industry partnership.

Home	Databases	Tools & Software	Reports	News & Events	Purchase HCUP Data	Technical Assistance	Data Innovations
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HCUP Methods Series

The HCUP Methods Series features a broad array of methodological information on the HCUP databases and software tools. Reports in the series are listed below by category. Reports are also listed by year in [chronological](#) order.

Methodology

- [Calculating Costs](#)
- [Estimating Trends \(NIS and KID\)](#)
- [Expected Payer](#)
- [Population Denominator Data for Use with HCUP Databases](#)
- [Readmission and Revisit Analyses](#)
- [Statistical Methods](#)

HCUP Methods for NHQR and NHDR

- [NHDR](#)
- [NHQR](#)

Calculating Costs

- Report #2011-04 [Tools for More Accurate Inpatient Cost Estimates with HCUP Databases, 2009](#) (PDF file, 837 KB)
- Report #2008-04 [Calculate Cost Adjustment Factors by APR-DRG and CCS Using Selected States with Detailed Charge](#) (PDF file, 122 KB)
- Report #2008-03 [The Cost of Ambulatory Surgery Visits, 2005](#) (PDF file, 187 KB)
- Report #2007-05 [The Cost of "Treat and Release" to Hospital Emergency Departments, 2003](#) (PDF file, 166 KB)

Comparison Reports - Kids' Inpatient Database (KID)

- Report #2006-03 [2003 HCUP KIDS' Inpatient Database \(KID\) Comparison Report](#) (PDF file, 607 KB)
- Report #2001-01 [Comparative Analysis of the HCUP Kids' Inpatient Database \(KID\), 1997](#) (PDF file, 645 KB)

Comparison Reports - National (Nationwide) Inpatient Sample (NIS)

Comparison Reports

- [NIS](#)
- [KID](#)

Evaluations of Data

- [Emergency Department Data](#)
- [State Ambulatory Surgery and Services Databases](#)
- [Other \(Patient Safety Variation, E Codes, Observation Stays\)](#)

Enhancing Administrative Data

- Clinical Information
- Diagnosis Present on Admission Indicators
- Synthetic Person Numbers (for linking across settings and over time)

HCUP Tool Development

- Clinical Classifications Software
- Comorbidity Software
- Utilization Flags



Reports

HCUP reports include new findings, publications, research notes based on HCUP data, and technical reports about HCUP issues. These products are developed by AHRQ through a Federal-State-Industry partnership.

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Favorites

HCUP Statistical Briefs

Statistical Briefs are simple, descriptive reports on a variety of specific health-care related issues. A full list is available by [topic](#) and [chronological order](#). The most recent briefs are:

- [Surgeries in Hospital-Owned Outpatient Facilities, 2012](#)
- [Overview of Hospital Stays for Children in the United States, 2012](#)

HCUP Infographics

Infographics provide a visual representation of Statistical Brief data. A [full list](#) is available. The most recent infographic is:

- [Inpatient vs. Outpatient Surgeries in U.S. Hospitals, 2012](#) (PDF file, 1.0 MB)

HCUP Projections

Projection reports use longitudinal HCUP data to project national and regional estimates on health care priorities. A [full list](#) is available. The most recent reports are:

- [Clostridium Difficile Hospitalizations 2003-2014](#) (PDF file, 1.9 MB)
- Statistical Brief #183: Trends and Projections in Hospital Stays for Adults With Multiple Chronic Conditions, 2003-2014 ([PDF](#) file, 192 KB; [HTML](#)).

Information About Using HCUP Data

HCUP Methods Series

Methods Series reports, organized by [topic](#) and [chronological order](#), feature a broad array of methodological information on the HCUP databases and software tools. The most recent reports are:

- [HCUP External Cause of Injury Code \(E Code\) Evaluation Report \(Updated with 2012 HCUP Data\)](#) (PDF file, 429 KB)
- [Methods Applying AHRQ Quality Indicators to Healthcare Cost and Utilization Project \(HCUP\) Data for the 2014 National Healthcare Quality Report \(NHQR\) and National Healthcare Disparities Report \(NHDR\)](#) (PDF file, 634 KB)

HCUP Nationwide Database Reports

These reports are specific to the design and content of the HCUP nationwide databases.

- [National \(Nationwide\) Inpatient Sample \(NIS\)](#)
- [Kids' Inpatient Database \(KID\)](#)
- [Nationwide Emergency Department Sample \(NEDS\)](#)

HCUP State Database Reports

These reports are specific to the design and content of the HCUP state databases.

- [State Inpatient Databases \(SID\)](#)
- [State Ambulatory Surgery and Services Databases \(SASD\)](#)
- [State Emergency Department Databases \(SEDD\)](#)

Publications and Additional Topics

Topical Reports

Topical reports provide information about various priority populations.

- Approaches to using [race-ethnicity data for reducing disparities](#)
- Utilization and spending for [mental and substance use disorders](#)

HCUP Publications

These links provide access to lists of publications, resources, and descriptions of research activities that are based on HCUP data, software products, and tools.

- [Search for HCUP publications](#)
- [Research Spotlights](#) on recent peer-reviewed journal articles
- [Review comprehensive list of AHRQ publications](#)

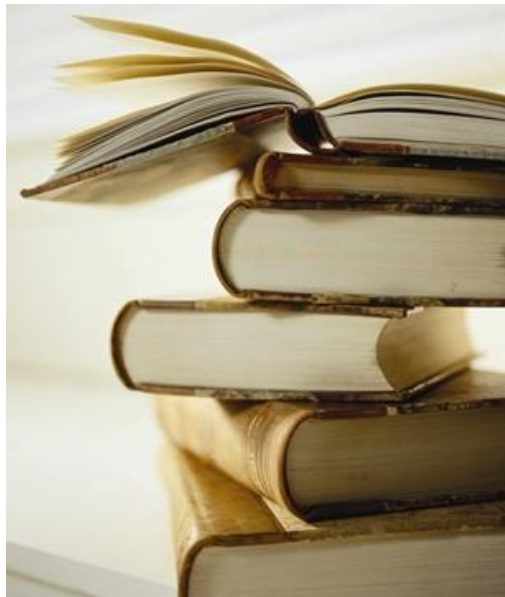
HCUP Archive

This archive features a broad array of information based on HCUP databases and other related reports.

- [The Value of Hospital Discharge Data](#) (PDF file, 664 KB) (Posted May 2005)
- [HCUP Facts and Figures](#) (2005-2009)
- [HCUP Highlights](#) (2001-2003)
- [HCUP Fact Books](#) (1997-2004)
- [HCUP National Statistics Archive](#) (1992-1996)

New: Publications Search Page on HCUP-US

- **Simple or advanced search options**
 - ▶ Data Year
 - ▶ Database, Tool, & Product
 - ▶ Author
 - ▶ Title
 - ▶ State





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H-CUP
HEALTHCARE COST AND UTILIZATION PROJECT

HSR

American Journal of
PUBLIC HEALTH



The NEW ENGLAND
JOURNAL of MEDICINE

HEALTH
AFFAIRS
*The Policy Journal
of the Health Sphere*

CANCER

ANNALS OF **SURGERY**
A Monthly Review of Surgical Science Since 1885

PEDIATRICS

JGIM Journal of General Internal Medicine

Health
Economics

THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine

PharmacoEconomics

Newsweek

• Make Newsweek Your Homepage

OBSTETRICS & GYNECOLOGY

INQUIRY

THE LANCET

International Journal of
Health Care Finance
& Economics

RURAL HEALTH THE JOURNAL OF

MIMWR
Morbidity and Mortality Weekly Report

National Healthcare Disparities Report

www.qualitytools.ahrq.gov/disparitiesreport



- **Research Spotlights**

- <http://www.hcup-us.ahrq.gov/reports/spotlights.jsp>



Aliu O, Auger KA, Sun GH, Burke JF, Cooke CR, Chung KC, Hayward RA.

The effect of pre-Affordable Care Act (ACA) Medicaid eligibility expansion in New York State on access to specialty surgical care. *Med Care.* 2014 Sep;52(9):790-5.

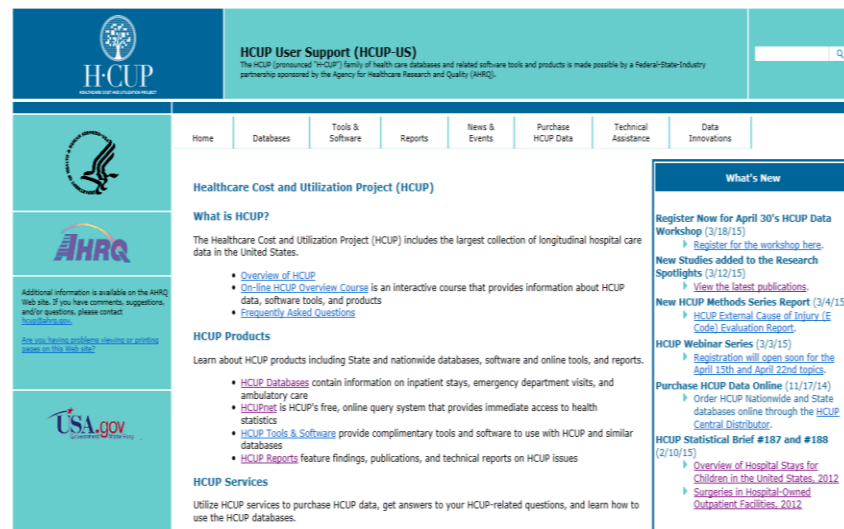
- **Brief Database Review**
- **Software Tools**
- **Supplemental Files**
- **HCUPnet Overview**
- **Publications and Publication Search**
- **How to Access HCUP Resources**



HCUP User Support Web Site



- Find detailed information on HCUP databases, tools, and products
- Access HCUPnet
- Find comprehensive list of HCUP-related publications, database reports, and fact books
- Access technical assistance



<http://www.hcup-us.ahrq.gov>



Active Technical Assistance

- Responds to inquiries about HCUP data, products, and tools
- Collects user feedback and suggestions for improvement

E-mail: hcup@ahrq.gov

Interactive Online HCUP Overview Course Available

- Provides information about HCUP data, software tools, and products
- Length 90 min

The HCUP Overview Course
Overview of HCUP Data

Powerful data. Meaningful answers.

exit

menu resources help

Inpatient

State Inpatient Databases (SID)

Nationwide Inpatient Sample (NIS)

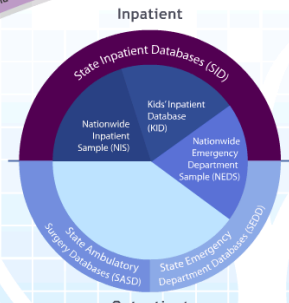
Kids' Inpatient Database (KID)

Nationwide Emergency Department Sample (NEDS)

State Ambulatory Surgery Databases (SASD)

State Emergency Department Databases (SEDD)

Outpatient



The State Inpatient Databases (SID) are a set of state-level hospital databases capturing inpatient care in participating states. Researchers and policymakers can use the SID to study many state-level issues surrounding health care utilization, access, charges and costs, quality, and outcomes.

Roll over each of the six databases for a brief description.


Next ▶
◀ Back
Map

The HCUP Overview Course
Introduction

Powerful data. Meaningful answers.

exit

menu resources help



H·CUP
HEALTHCARE COST AND UTILIZATION PROJECT

Powerful data. Meaningful answers.

Do admission rates for preventable hospitalizations vary across the U.S.?

Can HCUP help address my research interests?

What percentage of hospitalizations for children are uninsured in my state?

Will there be enough cases for my analysis?

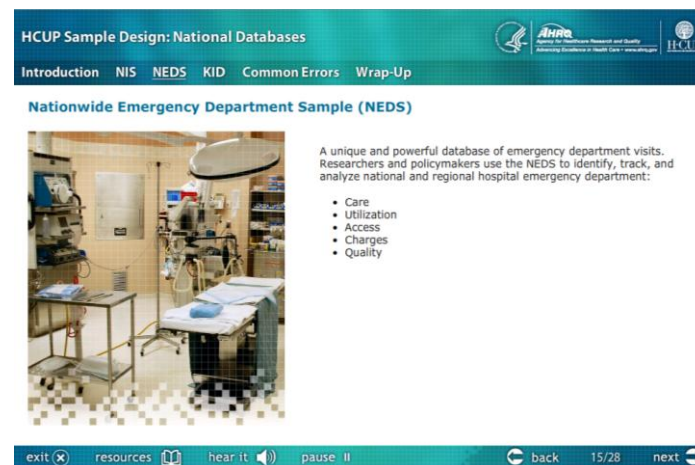
What are the latest trends in admissions for depression?

What tools are available to help me in my research?

Next ▶
◀ Back
Map

<http://www.hcup-us.ahrq.gov/overviewcourse.jsp>

- Tutorial explains the sampling strategy of the three nationwide databases – the NIS, KID, and NEDS
- Length 30 min



http://www.hcup-us.ahrq.gov/tech_assist/tutorials.jsp

Load and Check HCUP Data

- Provides instructions on how to unzip HCUP data, save it on your computer, and load data into a statistical software package
- Length 20 min

Load and Check HCUP Data

Introduction Load Check Wrap-Up



Healthcare Cost and Utilization Project

Load and Check

exit resources hear it play back 1/16 next

Load and Check HCUP Data

Introduction Load Check Wrap-Up

Running Check Programs

My NIS Data Means and Frequencies:

AGE (Age)	Frequency	Percent of Total
0		
1		

LOS (Length of Stay)

LOS	Frequency	Percent of Total
0 days		
1 day		

PAY (Expected Primary Payer)

PAY	Frequency	Percent of Total
1: Medicare		
2: Medicaid		

HCUP-US Summary Statistics Means and Frequencies:

AGE (Age)	Frequency	Percent of Total
0		
1		

LOS (Length of Stay)

LOS	Frequency	Percent of Total
0 days		
1 day		

PAY (Expected Primary Payer)

PAY	Frequency	Percent of Total
1: Medicare		
2: Medicaid		

Create tables of means and of frequency distributions from the data on your computer.

Compare those statistics to the summary statistics available on HCUP-US.

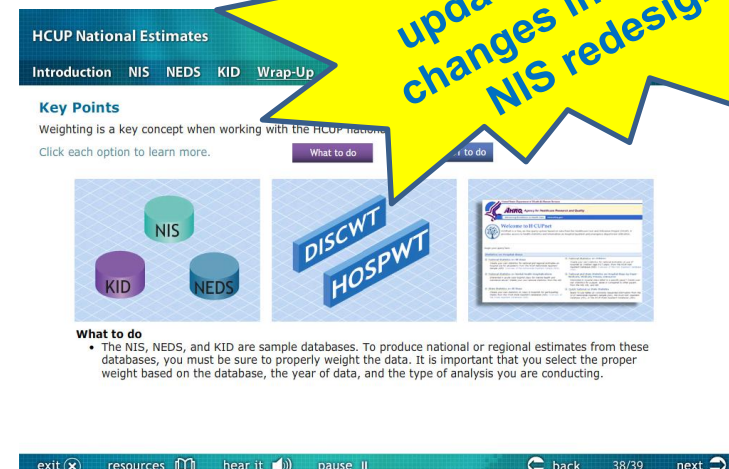
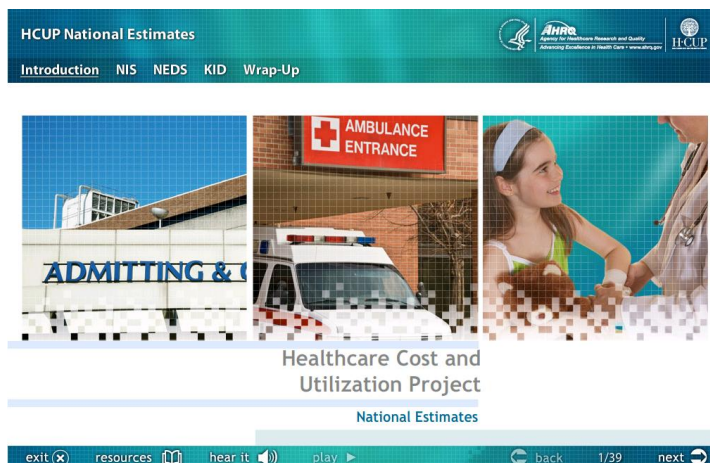
exit resources hear it pause back 13/16 next

http://www.hcup-us.ahrq.gov/tech_assist/tutorials.jsp

Producing National HCUP Estimates

- Explains how to produce national estimates from the three nationwide databases (NIS, NEDS, KID)
- Length 45 min

Tutorial will be updated to reflect changes in the 2012 NIS redesign

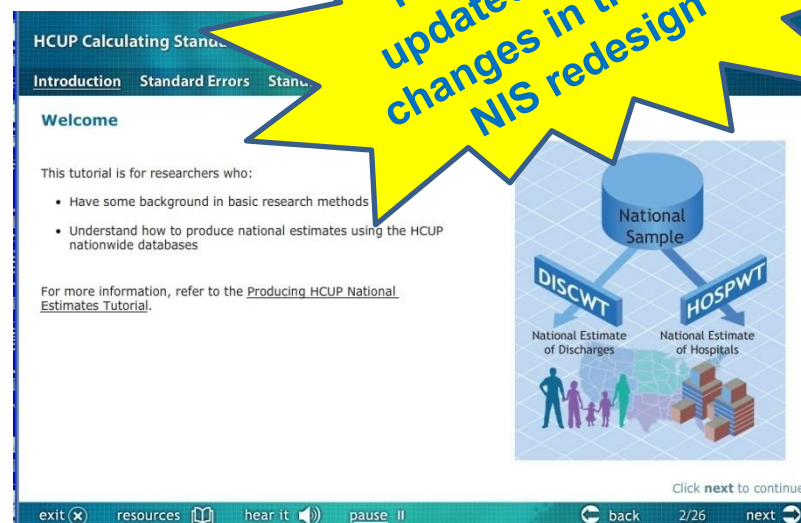


http://www.hcup-us.ahrq.gov/tech_assist/tutorials.jsp

Calculating Standard Errors

- Explains how to accurately determine the precision of the estimates produced from the HCUP nationwide databases
- Length 30 min

Tutorial will be updated to reflect changes in the 2012 NIS redesign

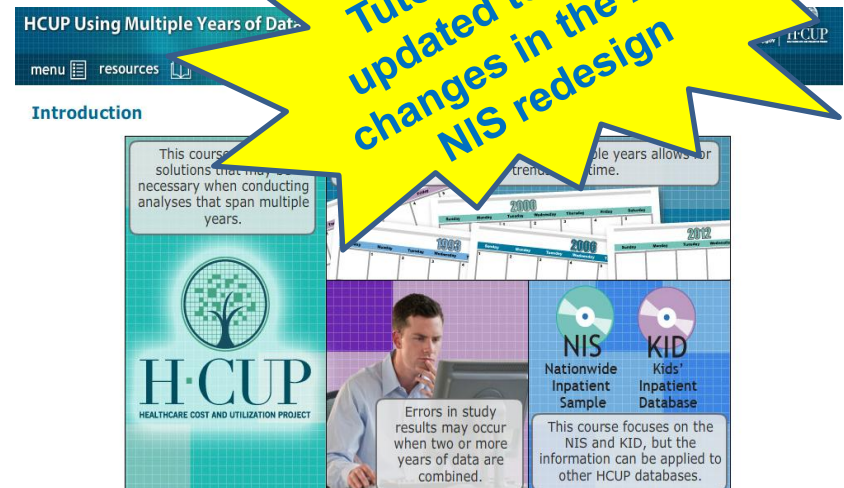


http://www.hcup-us.ahrq.gov/tech_assist/tutorials.jsp

- Describe problems that may arise when using multiple years of HCUP data and provides solutions for addressing these issues
- Length 30 min



Healthcare Cost and
Utilization Project
Trend Analysis



HCUP Using Multiple Years of Data

menu resources

Introduction

This course provides solutions that may be necessary when conducting analyses that span multiple years.

H-CUP
HEALTHCARE COST AND UTILIZATION PROJECT

Errors in study results may occur when two or more years of data are combined.

NIS
Nationwide Inpatient Sample

KID
Kids' Inpatient Database

This course focuses on the NIS and KID, but the information can be applied to other HCUP databases.

Tutorial will be updated to reflect changes in the 2012 NIS redesign

http://www.hcup-us.ahrq.gov/tech_assist/tutorials.jsp



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**Time for Questions
and/or Comments.**

